

UKGCE Summer Conference 2007:  
Masters & Doctorates in the 21st Century and the impact of the Digital Age.

**Multinational Networks for Research & Communication in the Digital Arts:  
Challenges for Research Supervision.**

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*To the extent that digital art resists prescriptive orthodoxy and academic predictability, there is still unclaimed territory out there, a digital terra incognita inviting exploration that will require explication, orientation and mapping. The question posed by this session is: where are the guides to this unknown land to be found? By what authority will they legitimise each expedition into the unknown, by what criteria will they evaluate the worth of each claim of discovery? Through what experience and skills will they supervise unforeseeable behaviours, and fluctuating aesthetic decisions? Who will extricate travellers from the quicksand of relativism; support radical methodologies? In short, who will guide the guides when the event horizon is always receding? Who guides the guides when they too are exploring the unknown and challenging the unknowable? It is in these unknown territories of pixels and particles, mind-to-mind communication, and out of body telepresence that research in digital arts practice is located, where no metalanguage presides, and where new forms of description, navigation and mapping must be invented. Supervision becomes the collective responsibility of groups of explorers, collaborating across networks to climb the summit of new knowledge, sharing insights and websites along the way. This is supervision Bob, but not as we know it!*

This presentation first briefly outlines the relationship historically between telematic networks and interactive digital art, referring on the one hand to the evolution of interface mobility and the Net, and on the other to the emergence of concept-driven, behaviour-based, and technology-assisted art as exemplified by new media art practice and theory.

The origin of networking in the context of art practice and arts research lies in the opening up of Arpanet to commercial and educational exploitation, the introduction of the GUI (graphic user interface), and the introduction of desktop terminals, and the pioneering work of technologists, writers, entrepreneurs and artists<sup>1</sup>. In this respect, we can cite the seminal work from the 1940s onwards of such early technologists<sup>2</sup> as Vannevar Bush, Paul Baran, Douglas Engelbart; Ivan Sutherland, and Alan Kay, and the support of the early (charitable!) providers: *I.P Sharp Associates*, Toronto, and *Infomedia*, San Bruno, California. Some notably influential texts on networking published during this period were by Alain Minc and Simon Nora<sup>3</sup>, Jacques Vallee and Robert Johansen<sup>4</sup>, and Murray Turoff and Starr Roxanne Hiltz<sup>5</sup>. The importance of cybernetics at that time cannot be over emphasized, and the significance of texts by Wiener, Ashby, Stafford Beer, and Grey Walter should be acknowledged<sup>6</sup>. Early art

projects in the telematic domain include *Interplay* for Computer Culture, Toronto, 1979, by Bill Bartlett, *The World in Twenty-four Hours* for Ars Electronica, Linz, 1983, by Robert Adrian; *La Plissure du Texte* for Electra, Paris, 1984, by Roy Ascott, *Hearsay*, Toronto, 1985, by Norman White, and the large-scale *Laboratorio Ubiqua*, that constituted the Technology and Informatics section of the 42nd Venice Biennale 1986<sup>7</sup>.

Throughout the 1980s, NSFNet, BITNET, Compuserve, Usenet, JANET, and other commercial and educational networks opened up, offering more opportunities for artists engaged in distributed authorship and interactive networking projects of various kinds. In 1990, Interactive Art was formally recognized as a new prize category at Ars Electronica<sup>8</sup>, the main international showcase of digital art, held in Linz, Austria. The annual Ars Electronica awards and festival provide a guide to the state of the art. By 2007, its prize categories included *Interactive Art*, *Digital Communities*, *Freestyle Computing*, *Computer Animation/Film and VFX*, *Digital Music*, *Hybrid Art*, and *Media Art Research*. Ars Electronica possesses extensive archives of digital media art. *The Personnel Archive* contains information on artists and theoreticians who have participated in Ars Electronica since its beginnings in 1979. *The Project Archive* contains material on projects that have been completed since 1996 within the framework of the Festival and the Prix Ars Electronica, in the Ars Electronica Futurelab or the Ars Electronica Center. The Center itself, in whose initial design I was directly involved, is a model of the Museum of the Future and a testing ground for onsite/online curatorial presentation of art projects in the digital domain.

During the last decade of the 20<sup>th</sup> century digital art projects increased exponentially, and in the last six years an additional source of creativity has been released in the Internet by YouTube and the social software of blogs and wikis. Similarly, *Second Life* provides a common ground for creative projects and art practice by both artists and the general public. Researchers also occupy virtual space in this MMPORG, which is mutating into something rather more significant culturally than might seem to be suggested by its bland description as a “Massively Multiple-Player Online Role Playing Game”. Linden Lab’s *Second Life Education Wiki*<sup>9</sup> offers access to the *Second Life Grad Student Colony* and *Second Life Research*.

A Networking database that includes institutes, projects, researchers, publicists, conferences, book titles, online papers, periodicals, writings, net art, mobile art, and performance art is provided by Reinhold Grether of Constance University. His Netzwissenschaft project is an ongoing work of impressive scholarship<sup>10</sup>. The archives of Turbulence’s *Networked\_Performance* blog<sup>11</sup> are also a data-rich resource of considerable value. These are just a few of the database resources available today, and each month brings forward new sources of new media art as it develops across the globe, new blogs and wikis that can be of value to the artist appear almost daily.

One simplified overview of the diversity of digital art produced under the rubric of doctoral research can be obtained by looking at the research outputs of artists who graduated from the PhD programme of the Centre for Advanced Inquiry in the Interactive Arts (CAiiA) that was first established at the University of Wales College Newport in

1994, and those graduated or currently registered in its developed form as the *Planetary Collegium*<sup>12</sup> at the University of Plymouth. The work, taken as a whole, constitutes a microcosm of the art and technology field, since my intention in building the doctoral programme has been to focus on the principle strands of emergent practice. The interest of all these artists, who are well established in their field, in committing themselves to the rigors of doctoral research, is primarily to theorise and develop their practice in a critically engaged community, so as to contribute to the definition of the emergent fields of new media art, whether digital, biological or technoetic, that are largely deficient in specialist theoreticians or historians.

A list of thesis projects of Collegium artists who have been awarded the PhD over the past seven years will give some idea of the scope of research activity that formal supervision has had to cover:

Jill Scott, *Digital Body Automata*; Dew Harrison, *Hypermedia Systems: the creation and interpretation of concept-based art*; Bill Seaman, *Recombinant Poetics; Emergent Meaning as Examined and Explored within a specific Generative Virtual Environment*; Joseph Nechvatal, *Immersive Ideals/Critical Distances*; Victoria Vesna, *Networked Public Spaces: an investigation into Virtual Embodiment*; Miroslaw Rogala, *Strategies for Interactive Public Art: dynamic mapping with (v)user behaviour and multi-linked experience*; Jon Bedworth, *Music as Embodied Action, Interfacing Autonomous Systems and Rhythmical Expression*; Christa Sommerer, *Creating Complexity through Interaction: the Application of Complex System and Origin of Life Theory to Interactive Art Work*; Eduardo Kac, *Telepresence and Transgenic Art*; Elisa Giaccardi, *Principles of Metadesign*; Gretchen Schiller, *The Kinesfield: study of movement-based interactive and choreographic art*; Peter Anders, *A Procedural Model for the Integration of Physical and Cyber Space in Architecture*; Pamela Jennings, *Creative Interactive Technologies and the Public Sphere: toward a theory of critical creative technology*; Geoff Cox, *Antithesis: The Dialectics of Software Art*; Diane Gromala, *Toward a Phenomenological Theory of the Visceral in the Interactive Arts*.

This list invites a brief examination of the canon of interactivity, and the cultural shift between 20<sup>th</sup> century orthodoxies of modernism and the syncretism of 21st century new media art, involving distributed authorship, the technology of consciousness, relationships with the metaphors of science, and the fluctuating status of the art object. For example, the convergence of computational systems and biological processes that lead to a kind of *moistmedia* should be brought into view. Similarly the *telenoic turn*, and the move from an interest in the behaviour of forms to forms of behaviour, and from object to process, should be noted. The five-fold path of interactive art starts with the *connectivity* of minds and machines, demands *immersion* in cyberspace or some form of mixed reality, invites human *interaction* with cybernetic systems, leading through

processes of *transformation* to the *emergence* of new meanings, images, forms, structures and states of consciousness.

Interactivity in computer-mediated art practice leads to questions of authorship, methodology, support and evaluation. Within a transdisciplinary context, the integration of art, science, technology, and consciousness research, is often involved, employing developments in telematics, VR and Mixed Reality, Alife, hypermedia, agent technology, nanotechnology, transgenics, data imaging, cybernetics and technoetic systems, as they apply to installation, narrative, poetry, dance, performance, music, photography and video, architecture, social and gaming environments, and a host of generative and hybrid practices at various levels of emergence.

From all this it follows that some form of supervision that is essentially *transdisciplinary* is required. In this process, the term ‘supervision’, generally indicative of a kind of master-pupil pairing, or top-down relationship within a well defined universe of discourse, may require redefinition when that universe fragments as the result of technological innovation, or when a community of practice mutates to a condition of non-linear complexity. We are seeing a shift in art from the apparently unified aesthetic of modernism, through the discontinuities and ambiguities of the post-modern, to a sort of non-linear, multi-modal, all-networked syncretism of the early 21<sup>st</sup> century. In this context, one could say that super-vision calls for telematic cyberception<sup>13</sup>. The ready access to such massive diversity and complexity of data, ideas, projects, publications and the many transdisciplinary initiatives that this implies must challenge the academic research principle of investing leadership and responsibility for an individual research student in one lone ranger, and a second gun, with perhaps a little advisory backup if budgets permit. We are being, so to speak, net-worked over and data-driven to find new modes of responsibility and guidance for our doctoral researchers. The humanities model is hardly sufficient. If I were to nominate an exception it would be the *Stanford Humanities Lab*<sup>14</sup> whose principles of multi-purposing of projects, and of collaborative co-creation mirror those integral to research strategies at work in the Planetary Collegium.

There are many institutions providing for Digital Arts research at various levels, none of which should be expected to adopt uncritically the models of research supervision employed in the sciences or humanities. We would all be well served by an inquiry into the supervisory practice of those institutions thought to be leaders in the field. In 2004, Mark Tribe and Michael Naimark created for Brown University *A Wiki Directory of Academic Art and Technology Programs*<sup>15</sup>. Although weighted somewhat in favour of US institutions, the list contains key programmes in other parts of the world: ZKM Karlsruhe, the Banff Center, C3 Budapest, Concordia Computational Arts in Montreal, Lansdown Center for Electronic Arts at Middlesex, IVREA in Turin, IAMAS at Gifu, Japan, Le Fresnoy in France, Pompeu Fabra in Barcelona, the Royal College of Art’s Interactive Design, and Information Media at the University of the Arts in London, and the Planetary Collegium. I am sure there are other programmes that this conference might nominate for inclusion in the Directory (a response the Wiki invites), or other online directories that could be identified. One purpose of our collective work might be to uncover these. Some of the research resources and outputs of these institutions are

accounted for in the *Leonardo Education Forum Bibliography of Resources for Studies in Art/Science/Technology*<sup>16</sup>, but I know of no comprehensive survey that includes the whole spectrum of approaches to Digital Arts research supervision.

This presentation will take as a case study the structure and culture of the Planetary Collegium PhD programme and the way supervision is instituted. It should be noted that the programme limits enrolment largely to mid-career artists rather than those at the beginning of their career. This is not for reasons of elitism, but in the belief that, since there are few theorists, critics, or historians addressing the emergent field of art and technology, artists must take it upon themselves to theorise their own practice, define its context, and establish its transdisciplinary nexus. So, the Collegium takes the view that to engage those working at what can be considered the highest level of international recognition and influence is to begin to advance a critical understanding of this nascent digital (and post-biological) arts culture. Subsequently, it is thought, the flow of ideas, insights and models of practice can cascade down to inspire and inform the research of younger, emergent artists. In this respect, most graduates from the programme go on to occupy positions of influence in universities and media art organisations.

Before discussing the challenges for supervision in this context, this presentation will set out the structure of the Collegium's PhD programme. Without applying some Fourier-like mystical number to group size, it would be more or less impossible to function with more than between about 15 and 25 students at any one time, if critical intimacy is to be sustained, and the pattern of each individual's development carried forward by each member of the research group. Since applications to join the programme far exceed this limit, 'nodes' have been created in other host institutions. At present, networking with the CAiiA-Hub in Plymouth, there are nodes in Milan<sup>17</sup> (host: Nuova Accademia di Belle Arte di Milano) and Zurich<sup>18</sup> (host: Hochschule für Gestaltung und Kunst Zürich), with others in the process of being established in Beijing (host: Peking University), São Paulo (host: Centro Universtário Senac), and Seoul (host: Dankook University). In the process of establishing a Node, the host institution undertakes, inter alia, the following objectives:

- to combine the face-to-face association of individuals with the online requirements of a networking community;
- to foster practice-led and theoretical research in the transdisciplinary space between culture and technology, the arts and the sciences;
- to promote new forms of creativity and learning at the advanced level, in a variety of cultural settings;
- to develop and disseminate critical understandings of new concepts in art and science, including the cultural impact and relevance of these concepts to education, industry and entertainment;
- to share information across the Planetary Collegium's network;
- to practice the integration of various perspectives in a wide variety of cultural and technologically informed methods of enquiry.

The pool of supervisors and advisors derived from the supervisory requirements of the CAiiA-hub and the Nodes collectively is relatively extensive, and since supervisors will

be largely “remote”, much of their interaction with research students will be in cyberspace. *Skype*, whether in chat, audio, or video mode, is particularly effective in extending conversations initiated in Composite Sessions, or dealing with problems or questions in real time.

The Collegium’s doctoral candidates are almost entirely part-time. They are required to attend three ten-day face-to-face *Composite Sessions* each year, over a continuous three year period. Typically, each session involves three days of individual 90 minute research updates, presented for discussion by the group; a three stage critique by all members of the group in respect of each others work; three individual tutorials; a two-day public symposium; and a one-day cultural visit. Whether based in the CAiiA-Hub, or at M-Node or Z-Node, all PhD students follow the same programme structure and periodically submit research report to the University of Plymouth, which awards the PhD.

The programme combines onsite and online face-to-face association of individuals with the nomadic, trans-cultural opportunities of a worldwide networking community. The Collegium is regularly invited to hold its Composite Sessions at universities and media centres abroad. Since 1997 these have been in Dublin, Marseilles, Rio de Janeiro, Tucson, Paris, Turin, Barcelona, Santa Cruz, Los Angeles, Perth, Ogaki, Zurich, Paraciutu, Fortaleza, Bilbao, Beijing, Dallas, Istanbul, Montreal, Sao Paulo. Each institution convenes a public conference around our research, involving also regional artists, which in turn leads to inter-cultural discourse and the introduction of new critical perspectives.

The Collegium’s stated aim is to produce new knowledge in the context of the arts, with special reference to technoetic research and to advances in science and technology, through transdisciplinary inquiry and shared discourse. It seeks outcomes that involve new language, systems, structures, and behaviours, and insights into the nature of mind, matter, and human identity. Its research is expected to reflect the social, technological, and spiritual aspirations of emerging planetary society, while sustaining a critical awareness of the retrograde forces and fields that inhibit social development.

The Collegium can be understood in part by questions it seeks to answer: How might new technologies and the metaphors of science be employed in the education of the artist? How might the insights of the artist contribute to the advancement of knowledge in science and to technological development? (Ask not what science can do for art but what art can do for science!). How can the accrued wisdom of exotic or ancient cultures be allied to the search for meaning and values in a post-biological society? How might new technologies serve to support and sustain cultures that lie beyond the Western paradigm? How might the Net serve the needs of interactive, non-linear, transdisciplinary learning, and engender creative thought and constructive action? How might new discourses be initiated which will bring critical, aesthetic, and moral perspectives to bear on emergent fields of practice? While stretching to the full the constructive and expressive potential of electronic, telematic, and interactive digital media, how might the Collegium pursue developments in post-biological research, molecular engineering, neuro science, and nanotechnology, while identifying artistic and spiritual strategies that optimise human capabilities, and seed new visions of a planetary society.

As this meeting may well disclose, not all those involved with research supervision in the digital arts domain are likely to see challenges in the humanities model that they are in general required to adopt. This may be because a significant proportion of the digital arts research they supervise may be sociological in orientation. Networking after all is a socially oriented technology, as the massive public appeal of such social networking sites as *Myspace*, *Orkut*, *Bebo*, *Dandelife*, or *Facebook* bear witness. (Nearly a hundred such English language sites are currently in operation<sup>19</sup>). Equally, if the planetary dimension of telematic consultation and support is ignored in favour of reliance on purely local academic resources, or if bold innovation and creativity are constrained by misinterpretations of academic propriety, the traditional forms of academic consultation, surveillance and guidance may well remain. The Digital Arts generate knowledge fields that differ greatly from those addressed in the Humanities, calling for the application and development of different research methodologies, different forms of presentation and evaluation, and, it would follow, different systems of supervision. In short, the challenge for research supervision is how to think out of the box but not end up in the wrapping. It is perhaps too easy for a Digital Arts research programme to be parceled up with the Humanities, but if the potential consequences are not fully examined, it may find itself enmeshed in ties that really do bind.

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<sup>1</sup> <http://www.artmuseum.net/w2vr/timeline/timeline.html> (accessed 10.5.07)

<sup>2</sup> [www.ibiblio.org/pioneers/](http://www.ibiblio.org/pioneers/) (accessed 10.5.07)

<sup>3</sup> Nora, Simon and Minc, Alain. (1980). *The Computerization of Society: a report to the President of France*. Cambridge, Mass: MIT Press. Originally published as *L'informatisation de la société: Rapport à M. le président de la République* (Paris: La Documentation française, 1978).

<sup>4</sup> Johansen, Robert and Vallée, Jacques, and Kathleen Spangler. (1979). *Electronic Meetings: Technical Alternatives and Social Choices*. Reading, Mass. Addison-Wesley.

<sup>5</sup> [library1.njit.edu/cccc-materials/index.cfm](http://library1.njit.edu/cccc-materials/index.cfm) (accessed 10.5.07)

<sup>6</sup> See: J.D. Stewart's *A bibliography of the first decade of cybernetics* at [www.hfr.org.uk/cybernetics-pages/bibcyb-ac.htm#a](http://www.hfr.org.uk/cybernetics-pages/bibcyb-ac.htm#a) (accessed 10.5.07)

<sup>7</sup> [alien.mur.at/rax/UBIQUA/index.html](http://alien.mur.at/rax/UBIQUA/index.html) (accessed 10.5.07)

<sup>8</sup> [www.aec.at/en/index.asp](http://www.aec.at/en/index.asp) (accessed 10.5.07)

<sup>9</sup> [www.simteach.com/wiki/index.php?title=Second\\_Life\\_Education\\_Wiki](http://www.simteach.com/wiki/index.php?title=Second_Life_Education_Wiki) (accessed 10.5.07)

<sup>10</sup> [www.netzwissenschaft.de/](http://www.netzwissenschaft.de/) (accessed 10.5.07)

<sup>11</sup> <http://www.turbulence.org/blog/> (accessed 10.5.07)

<sup>12</sup> [www.planetary-collegium.net](http://www.planetary-collegium.net) (accessed 10.5.07)

<sup>13</sup> [www.cyberday.de/news/ausgabe\\_100017.htm](http://www.cyberday.de/news/ausgabe_100017.htm) (accessed 10.5.07)

<sup>14</sup> <http://shl.stanford.edu/index.html> (accessed 10.5.07)

<sup>15</sup> [https://wiki.brown.edu/confluence/pages/viewpage.action?pageId=13017](http://wiki.brown.edu/confluence/pages/viewpage.action?pageId=13017) (accessed 10.5.07)

<sup>16</sup> [www.leonardo.info/isast/spec.projects/LEFbiblio.html](http://www.leonardo.info/isast/spec.projects/LEFbiblio.html) (accessed 10.5.07)

<sup>17</sup> [www.m-node.com/](http://www.m-node.com/) (accessed 10.5.07)

<sup>18</sup> [www.z-node.net/](http://www.z-node.net/) (accessed 10.5.07)

<sup>19</sup> [en.wikipedia.org/wiki/List\\_of\\_social\\_networking\\_websites](http://en.wikipedia.org/wiki/List_of_social_networking_websites) (accessed 10.5.07)